Building Code Safety Month Essay

"Building Codes Save Lives"

VA Department of Housing and Community Development

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How do the building codes impact your individual safety, and how do those codes impact the safety of your community collectively?

Building codes protect people by ensuring that structures in communities meet the basic regulations for public health, safety and welfare. Building codes also address cost and energy efficiency, which indirectly impact the safety of individuals and communities by dealing with such things as energy source crises and environmental impacts on energy sourcing.

Building codes establish a building's quality, safety and energy performance at the time of construction. They set regulations for the framework of the structure and are then enhanced by other codes and provisions that set guidelines for completed and occupied buildings. The International Building Code (IBC), developed by the International Code Council (ICC), is the widely accepted base code used in the United States. States and counties adopt and can adapt standards according to unique characteristics and concerns of specific localities.

Modern building codes arose after some of the worst fires in history. The devastation from these fires set new regulations that banned the use of wooden building materials and required the use of non-flammable components. Other safety challenges include sanitation, electrical, mechanical, plumbing and access considerations.

Examples of sanitation concerns include; prevention of moisture in buildings, prevention of pest entry, and proper disposal of waste. Electrical considerations are; voltage, wiring and grounding requirements, without which could result in electrocution or fire if not properly installed or handled. Mechanical issues address such things as proper ventilation, refrigeration, air conditioning and heating. Plumbing codes deal with piping for clean, potable water, as well as waste elimination. Finally, after the passing of the Americans with Disabilities Act (ADA), regulations were created to ensure that all Americans, both abled and disabled, have equal access to public facilities.

Building codes also address larger concerns, such as the previously mentioned environmental challenges, as well as natural disasters and terrorism. In comparing the devastation from the 2010 earthquakes that hit Chile and Haiti, Chile's fatalities were 521 compared to 230,000 in Haiti - even though the earthquake in Chile was stronger. The reason for this decreased impact on Chile is the fact that they have better structures. (Quake Comparison, 2010)

Code standards can be adapted to address unique characteristics and concerns. The state of Virginia, for example, has made changes to the codes regarding handicap accessible public toilets. This adaptation provides clarity so that architects and builders know how to construct these facilities in compliance with the ADA.

Florida has experienced severe hurricanes. After the destruction of Hurricane Andrew, Florida underwent major revamping of building codes. Some of the changes included; plywood roofing with staples instead of nails, shatterproof windows, and the requirement to fasten mobile homes more securely to their foundations. (Sainz, 2007)

The act of terrorism on September 11, 2001 in New York City led structural engineers to look at high-rise buildings and evaluate ways to avoid progressive collapse. A progressive collapse occurs when a portion of the building's structural integrity is destroyed, causing the building to collapse onto itself. The World Trade Center buildings collapsed after the impact of the planes caused damage to multiple structural elements of the building, and heat from the resulting fire caused the steel supports to distort and weaken. Engineers had to consider the qualities and properties of the construction in the walls and support columns of skyscrapers, such as ductility (the bendability of a material, which is a consideration in seismic codes) and durability (the strength of the material itself, or the layering of materials.) The resulting changes included the use of an exoskeletal enhancement to the framework that allows stress to be more evenly distributed throughout the building. (Building Safety Codes, 2011)

Building codes are extensive and cover a broad range of safety and health concerns that impact how people live and function within structures. County Building and Development offices

require builders to get a permit, and they also provide information about how to safely plan a building project. Code officials then inspect the construction and determine whether the architects and/or builders complied with the codes. The added benefit to complying with codes is cost. According to the National Institute of Building Sciences, the benefit of pre-disaster mitigation and compliance with current building codes shows a national benefit of $6 for every $1 invested. (Yerkes, 2018)

Energy impacts the health and safety of residents and the environment. Building new structures as "energy efficient" as possible is very important, but the renovation of older buildings must be considered, and currently there are few mandatory regulations pertaining to the proactive renovation of old buildings to keep them compliant with code amendments.

In conclusion, although building codes seem to be complicated, confusing and burdensome, they serve an important role in standardizing the guidelines for safe structural designs, while also considering energy and environmental concerns. Without these standards, our communities would be at much greater risk for natural and manmade disasters, which potentially result in injury, death or loss of personal property. As a future architecture student, it is my hope that I will one day contribute to innovative and sustainable technological advances that will promote safe and healthy environments for future generations.

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